Living Environment – Fall 2017 Edward R. Murrow High School
Exam 2 Review Sheet Mr. Sprague & Ms. Vogel

Format: 11 multiple choice questions and 11 open ended questions

Concepts to Review:

- Scientific Inquiry Skills
  - Understand the terms *hypothesis*, *independent variable*, *dependent variable*, *control*, and *placebo*.
  - Be able to explain how scientific ideas are different from ideas in other subjects (see Homework 2).
  - Be able to identify the independent and dependent variables in an experiment.
  - Be able to write a hypothesis in "If… then…" form.
  - Be able to identify the control group and the experimental group in an experiment.
  - Be able to identify factors that must be kept the same in both the control and experimental groups.
  - Be able to design a scientific experiment (see Homework 4 and classwork).
  - Be able to explain why it is important to repeat an experiment and use many test subjects.

- Cells (see Homework 7 and 8)
  - Understand the terms *organelle*, *cell*, *tissue*, *organ*, *organ system*, and *organism*, and be able to order these terms from the simplest to most complex.
  - Be able to explain what the cell theory tells us about cells.
  - Understand the terms *structure* and *function*, as well as how they relate to each other.
  - Know the function (job) of each of the following cell organelles: *cell membrane*, *nucleus*, *ribosome*, *mitochondria*, *cell wall*, *chloroplast*.
  - Be able to label a diagram of a plant cell and an animal cell.
  - Know the differences between a plant cell and an animal cell.
  - Be able to explain how two cell organelles work together to maintain homeostasis.

- Growth (see Homework 10)
  - Be able to define the life function of *growth*.
  - Know why chromosomes are important, what they are made up of, and where they are found in the cell.
  - Be able to summarize the process of mitosis.
  - Be able to explain why the process of mitosis is important in the body of a plant or animal.
  - Be able to compare the number of chromosomes in a parent cell to the number in its daughter cells.
  - Be able to compare the number of chromosomes in a body cell to those in a sperm or egg cell.
  - Be able to explain how cancer occurs.

- Transport of Molecules through a Membrane (see Homework 11 and 12)
  - Understand the terms *diffusion*, *concentration*, *equilibrium*, *osmosis*, and *active transport*.
  - Know which cell organelle is responsible for regulating what comes in and out of cells.
  - Be able to predict the way molecules will move naturally across a selectively permeable membrane or into/out of cells.
  - Be able to explain how diffusion is different from active transport (in terms of the direction in which molecules move and the role of energy).

- Diffusion in the Human Body (see Homework 13)
  - Be able to explain the jobs of each of the following organs in the body: *lungs*, *kidneys*, and *small intestine*.
  - Be able to describe how *nutrients*, *oxygen*, *carbon dioxide*, and *wastes* move by diffusion in the human body.

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- Enzymes and the Digestive System (see Homework 14)
  - Understand the terms *metabolism* and *homeostasis*.
  - Understand the terms *organic* and *inorganic*.
  - Understand the job of *enzymes* and understand how it relates to the terms *substrate* and *catalyst*.
  - Be able to explain why the shapes of enzymes are important.
  - Understand the term *denature* and be able to explain how a protein can become denatured.
  - Know the basic building blocks and functions of *carbohydrates* and *proteins*.

Practice Exam Questions:

- Visit the "Practice Exam Questions" page on the course website at www.spraguescience.com.
- Download the following files and try as many practice questions as you can:
  - Scientific Inquiry and Experimental Design
  - General Lab Skills: Graphing, Measurement, Microscopy
  - Cell Structure and Function
  - Diffusion and Active Transport
  - Homeostasis in the Human Body (practice questions 11–34 & 35–39)
- Check your work to each set of practice questions by downloading the answer key.